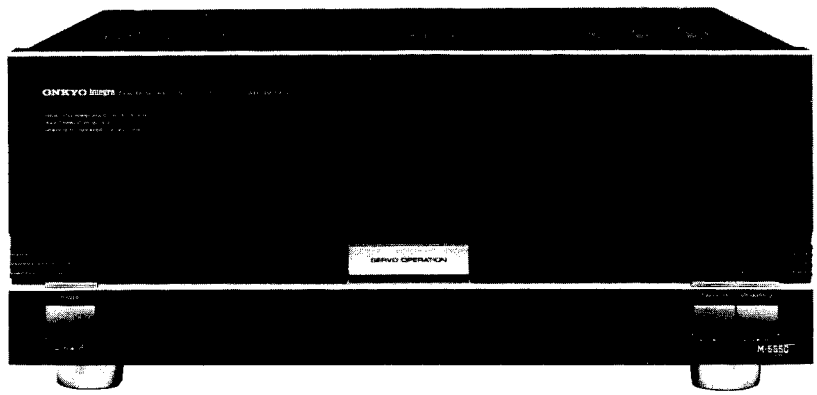
SERIAL No. 3291

ONKYO® SERVICE MANUAL

STEREO POWER AMPLIFIER
MODEL M-5550



SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTSWHOSE PARTS NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

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ONKYO®
AUDIO COMPONENTS

SPECIFICATIONS

Continuous Power:	2×220 watts at 4 ohms, 1kHz (DIN)
Output:	2×145 watts at 8 ohms, 1kHz (DIN) 140 watts per channel, min. RMS, at 8 ohms, both channels driven, from 20Hz to 20kHz, with no more than 0.005% Total Harmonic Distortion
Dynamic Power Output:	2×425 watts at 2 ohms, 1kHz 2×290 watts at 4 ohms, 1kHz
Total Harmonic Distortion:	0.005% at rated power 0.005% at 1 watt output
Intermodulation Distortion:	0.004% at rated power 0.004% at 1 watt output
Frequency Response:	+0, −1.5dB at 1Hz to 100kHz
Input Sensitivity:	1.0V
Input Impedance:	20 kohms
Damping Factor:	140 (8 ohms, 1kHz)
S/N ratio:	120dB (IHF-A, Shorted)
Outputs:	SPEAKERS 1 & 2
Inputs:	INPUT

Power Supply:	AC 220V, 50Hz
Dimensions (W×H×D):	435×186×423 mm 17-1/8″×7-5/16″×16-5/8″
Wide side panels (W×H×D):	465×187×423 mm 18-5/16″×7-3/8″×16-5/8″
Weight:	18.5 kg (40.8 lbs.)

Specifications and features are subject to change without notice.

PRECAUTIONS

1. Replacing the fuses

For continued protection against risk fire, replace only with same type and same rating fuse.

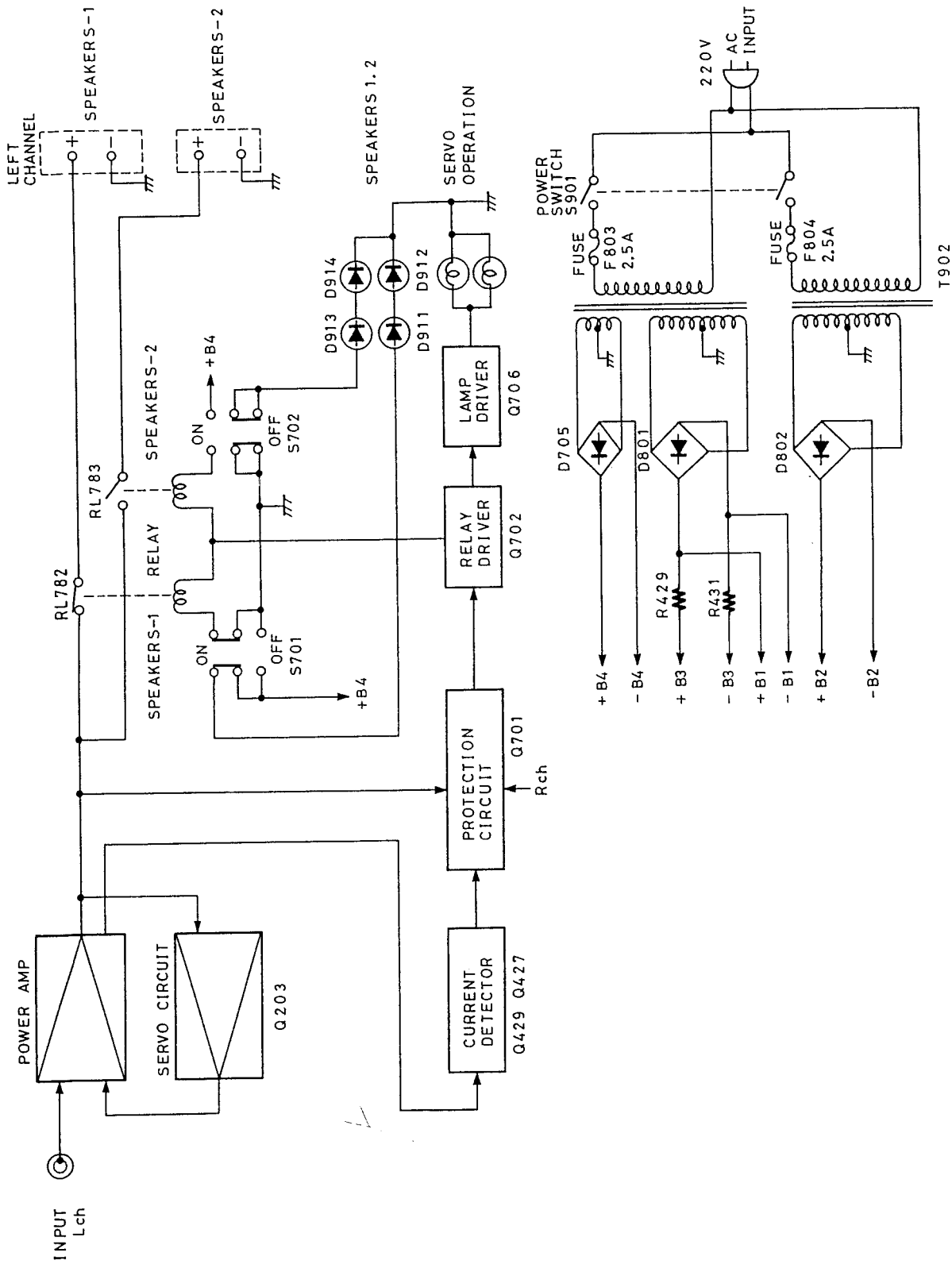
CIRCUIT NO.	PART NO.	DESCRIPTION
F801,F802	252075	2.5A-SE-EAK, Primary fuse

2. Replacing the lamp

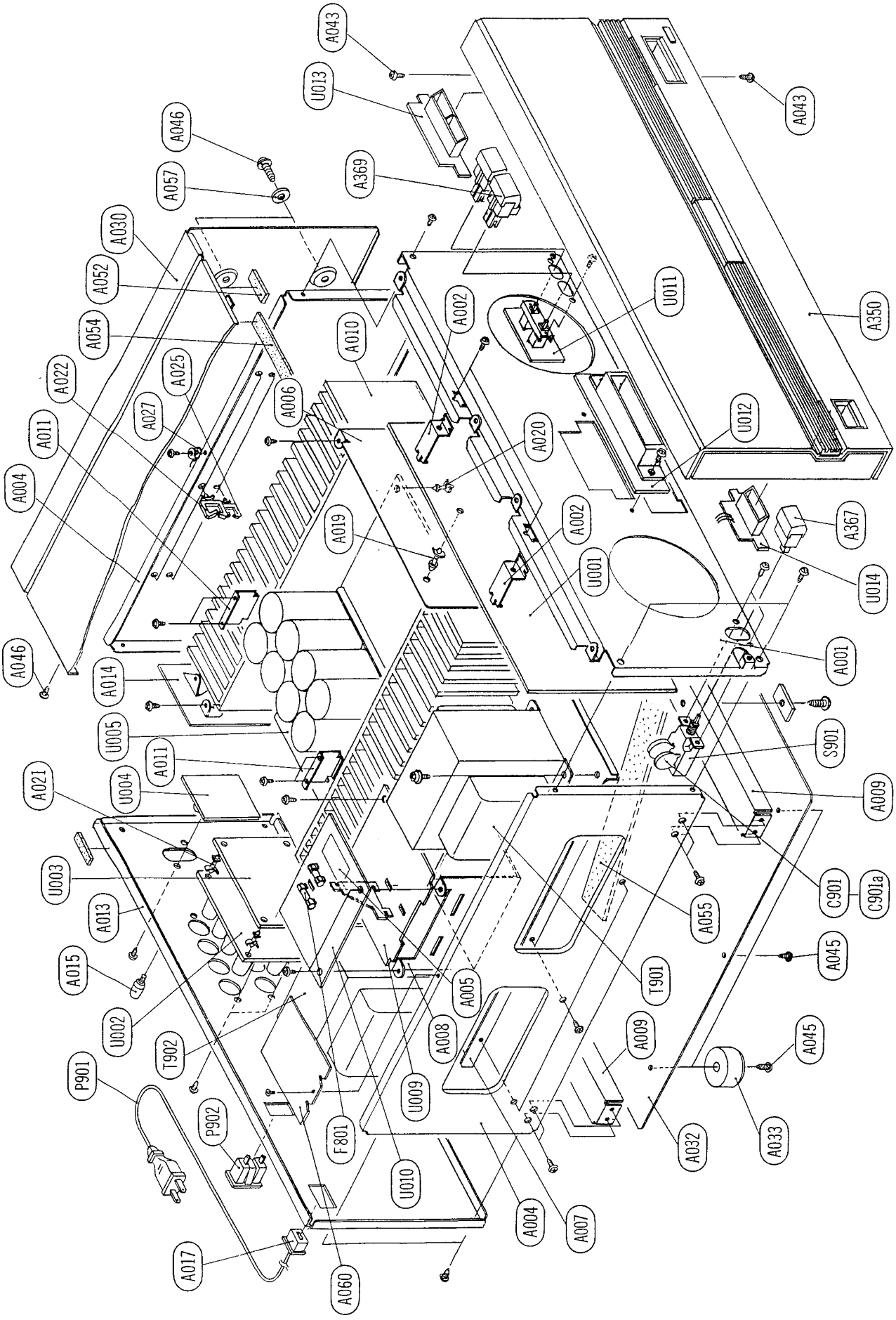
This unit uses the lamp listed below.

CIRCUIT NO.	PART NO.	DESCRIPTION
PL701, PL702	210160	PL14V150mA

BLOCK DIAGRAM



EXPLODED VIEW



CHASSIS-EXPLODED VIEW – PARTS LIST

REF NO.	PART NO.	DESCRIPTION
A001	27110285C	Front bracket
A002	27141064	Bracket, FPC
A004	27115204C	Side bracket
A005	29360626-1	Label
A006	27150224	Shield plate
A007	27130428B	Bracket, PT
A008	27141266	Bracket, PC
A009	27130427	Bracket
A010	27160195	Radiator
A011	27141068	Bracket, HE
A013	27121101	Back panel
A014	27150215B	Shield plate
A015	25060041	Ground terminal
A016	87644010	W4×10FBC, Washer
A017	27300750	#2271, Bushing (cord)
A019	27190011	Holder
A020	27190009	KGLS-4NS, Holder
A021	27190480	KGLS-6S, Holder
A022	27300243	WS-2WS, Clamp
A025	27300833	WS-2NS, Clamp
A030	28184319B	Cover
A032	27170226-2	Bottom board
A033	27175153	Bottom leg ass'y
A043	834430088	3TTS+8BBC, Tap-tight screw
A045	831430088	3TTW+8BBC, Tap-tight screw
A046	838440089	4TTB+8CBC, Tap-tight screw
A050	28140869	Cushion, Radiator(right)
A051	28140870	Cushion, Radiator(left)
A052	28140020	T4×10×40, Cushion
A054	28140695	Cushion
A055	28140761	Cushion
A057	27270202	Washer
A060	28175129	Insulating plate
A350	1A101121	Front panel ass'y
A367	28323350A	Knob ass'y, POW
A369	28323351A	Knob ass'y, SP

REF. NO.	PART NO.	DESCRIPTION
Q449, Q450	2201653 or	2SC3856O or
Q457, Q458	2201655 or	2SC3856P or
	2201654	2SC3856Y, Transistors
Q451, Q452	2201663 or	2SA1492O or
Q459, Q460	2201665 or	2SA1492P or
	2201664	2SA1492Y, Transistor
⚠T901	2300321	NPT-999G, Power transformer
⚠T902	2300325	NPT-1000G, Power transformer
⚠C901, C902	3500065A	0.01μF, AC400V/125V, Capacitor (IS)
⚠S901	25035381	NPS-121-L345P, Power switch
⚠P901	253148 or	AS-CEE or
	253150	AS-CEE, Power supply cable
⚠C901A, C902A	27300601	SB-1925, Cover (Capacitor)
⚠F801, F802	252075	2.5A-SE-EAK, Primary fuse
U001	1A101510-1A	NAAF-3310-1A, Servo and protection circuit PC board ass'y
U002	1A101514-1A	NAETC-3314-1A, Speaker relay circuit PC board ass'y
U003	1A101515-1A	NAETC-3315-1A, Speaker terminal PC board ass'y
U004	1A101516-1A	NAETC-3316-1A, Input terminal PC Board ass'y
U005	1A100520-1	NAAF-3320-1, Power amplifier circuit PC board ass'y
U006	1A100521-1	NAETC-3321-1, Transistor(Q443) PC board ass'y
U007	1A100522-1	NAETC-3322-1, Transistor(Q445) PC board ass'y
U008	1A100523-1	NAETC-3323-1, Transistor(Q447) PC board ass'y
U009	1A100524-1	NAPS-3324-1, Power supply circuit PC board ass'y

CIRCUIT NO.	PART NO.	DESCRIPTION
U010	1A100525-1A	NAETC-3325-1A, Fuse PC board ass'y
U011	1A100529-1	NASW-3329-1, Speaker switch PC board ass'y
U012	1A100530-1	NADIS-3330-1, Servo operation PC board ass'y
U013	1A100531-1	NADIS-3331-1, Speaker display PC board ass'y
U014	1A100532-1	NADIS-3332-1, Power display PC board ass'y

NOTE:
THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PARTS NUMBER SPECIFIED.

ADJUSTMENT

1. Preparation

(1) Set the machine on the work table so that it is parallel to the table in its normal condition, with a space between the bottom of the machine and the table top of 15 mm to permit free passage of air.
(2) There must be no load, no signal, and the VOLUME must be set to minimum level.
(3) Before the adjustment, with the power switch OFF, there must be no heat internally.

2. Idling current adjustment

(1) Turn ON the power switch and leave the unit as is for abnout 15 minutes.
(2) Adjust the semi-fixed resistor R423 (R424) so that the voltage between terminals V CT and I ID of the printed circuit board NAAF-3320 is 15mV. (Standard value is 15±3mV.)

Note: Semi-fixed resistor in ( ) indicates RIGHT CHANNEL.

3. Confirmation of protective circuit operation

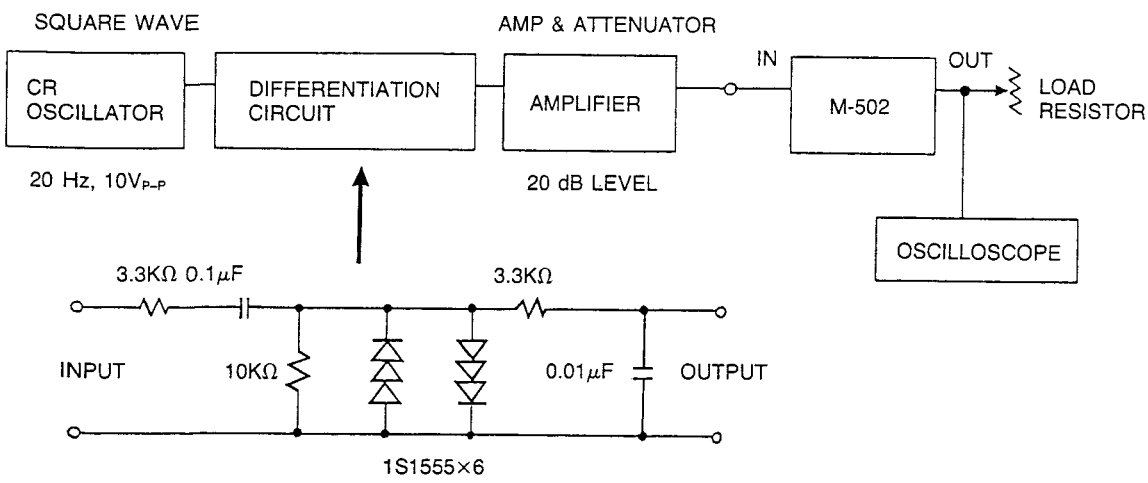
(1) Check of speaker relay and muting operation
① About 5 seconds after power is turned ON, relay RL782 or RL783 of PCB NAETC-3314 must go ON.
② At the same time as the above relays go ON, the SERVO OPERATION lamp must light.
③ When the power switch is turned OFF, immediately all relays must go OFF.

(2) Confirmation of DC detector operation
① In the no-load condition, turn ON the power switch.
② When 1V DC is applied to the input terrminal, the speaker relay must operate and the SERVO OPERATION lamp must go out.
③ The same condition must occur for an input of −1V DC applied to the input terminal.

Note: At the time of making this test, there must be absolutely no load connected, and no short at the output terminal. (This is to avoid damage to the speaker relay contacts.)

(3) Confirmation of current detection operation
① In the no-load condition with connections made as shown in the diagram below, input a signal to the set.
② Adjust the input so that the set output is 40V p–p.
③ When a load of 2Ω is connected to the set, Relays RL782 or RL783 must not go OFF.
④ Next, when a load of 0.33Ω is connected to the set, after the speaker relay goes ON-OFF several times, it must hold in the OFF condition.

NOTE: When there is a circuit abnormality and the protective circuit operates, the speaker relay goes ON-OFF several times repeatedly, and after serveral seconds, it is held in the OFF condition. Also, even after the cause of the abnormality has been eliminated, it remains held as it is. To cancel this condition turn OFF the power for several minutes.



PRINTED CIRCUIT BOARD PARTS LIST

SERVO AND PROTECTION CIRCUIT PC BOARD (NAAF-3310-1A) – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q201, Q202	2212806 or	2SK389-BL or
	2212807	2SK389-V
Q702	2211424	2SA817-Y
Q706	2201286 or	2SD882-P or
	2201285	2SD882-Q
	ICs	
Q203, Q204	222652	M5218L
Q701	222584	TA7317P
	Diodes	
D201~D204	223163	1SS133
D205~D208	224651301 or	HZ13E-B1 or
	224451301 or	MTZ13-A
	224151301	05AZ13-X
D701	223163	1SS133
D702	224650623 or	HZ6.2E-B3 or
	224450623 or	MTZ6.2-C or
	224150623	05AZ6.2-Z
D705	223889	RC202
D706	223894	1N4002F
	Capacitors	
C205, C206	372126814	680pF, 50V, Styrene
C207, C208	372122214	220pF, 50V, Styrene
C215~C218	391264707	47μF, 35V, Elect. (MUSE)
C223~C226	354742219	220μF, 16V, Elect.
C701, C702	354722219	220μF, 6.3V, Elect.
C704	354742209	22μF, 16V, Elect.
C706	354784799	0.47μF, 50V, Elect.
C707	354742219	220μF, 16V, Elect.
C708, C713	354751029	1000μF, 25V, Elect
C709, C710	379121045	0.1μF, 50V, Film (DEW)
	Resistors	
R213, R214	441626814	680Ω, 1W, Metal oxide film
R215, R216	441722234	22KΩ, 2W, Metal oxide film
R225, R226	442522724	2.7KΩ, 1/2W, Metal oxide film
R717	442520104	1Ω, 1/2W, Metal oxide film
R722	442525114	510Ω, 1/2W, Metal oxide film
R725	441721004	10Ω, 2W, Metal oxide film
R727	442521824	1.8KΩ, 1/2W, Metal oxide film
R911, R912	442522294	0.22Ω, 1/2W, Metal oxide film
	Socket ass'y	
P202	2000553	NSAS-6P509
P207,P208	2000889	NSAS-6P845
	Jumper sockets	
JL401,JL402	25050285	NSCT-8P113
JL409	25050283	NSCT-6P111
JL601,JL604	25050280	NSCT-3P108
JL607		
JL603	25050281	NSCT-4P109

SPEAKER RELAY CIRCUIT PC BOARD (NAETC-3314-1A) – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diodes	
D782,D783	223145	1S2076TD
	Coils	
L781~ L784	231015	S-0.8C
	Capacitors	
C781, C782	379131025	1000μF, 100V, Film (DEW)
C783~ C786	379121245	0.12μF, 50V, Film (DEW)
	Resistors	
R781~ R784	441620514	5.1Ω, 1W, Metal oxide film
R785, R786	441720514	5.1Ω, 2W, Metal oxide film
	Relays	
RL782, RL783	25065316	NRL-2P7A-DC12-43
	Jumper sockets	
JL407,JL408	25050273	NSCT-9P101
JL603	25050268	NSCT-4P96

SPEAKER TERMINAL PC BOARD (NAETC-3315-1A) – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Terminals	
P791,P792	25060120	NTM-4PDMN054
	Capacitors	
C791~C794	379131825	1800μF, 100V, Film (DEW)

INPUT TERMINAL PC BOARD (NAETC-3316-1A) – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Terminal	
P101	25045071	NPJ-2PDBL35
	Capacitors	
C103, C104	372123914	390pF, 50V, Styrene

POWER AMPLIFIER CIRCUIT PC BOARD (NAAF-3320-1) – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q401~ Q404	2211732 or	2SC1845-F or
	2211733	2SC1845-E
Q405,Q406	2211792 or	2SA992-F or
	2211793	2SA992-E
Q407,Q408	2211414	2SC1627-Y
Q411~ Q414	2211782 or	2SA991-F or
	2211783	2SA991-E
Q415~ Q418	2211902 or	2SC1844-F or
	2211903	2SC1844-E
Q421~ Q424	2211354 or	2SA949-Y or
	2211353	2SA949-O
Q425,Q426	2211634 or	2SC2229-Y or
	2211633	2SC2229-O
Q427,Q428	2211792 or	2SA992-F or
	2211793	2SA992-E
Q429,Q430	2212560	2SC3333
Q431,Q432	2211255	2SC1815-GR
Q433,Q434	2211455	2SA1015-GR
Q435,Q436	2211634 or	2SC2229-Y or
	2211633	2SC2229-O

CIRCUIT NO.	PART NO.	DESCRIPTION
Q437,Q438	2211354 or 2211353	2SA949-Y or 2SA949-O
	Diodes	
D405~D408	223163	1SS133
D409~D412	225218	LTZ-MR15, LED
D417~D420		
D413~D416	223162	1SS82
D421,D422	223163	1SS133
D423,D424	223168	DA210S
D431,D432	223163	1SS133
D433,D434	223145	1S2076TD
D435~D438	22380003	1N5402F
D439~D442	223162	1SS82
D461, D462	224651002 or 224151002	HZ10E-B2 or 05AZ10-Y
	Capacitors	
C405~C408	354743319	330μF, 16V, Elect.
C413~C416	391241007	10μF, 16V, Elect. (MUSE)
C423, C428		
C417, C418	379121025	1000pF, 50V, Film (DEW)
C435, C436	379131045	0.1μF, 100V, Film (DEW)
C437, C438	379122245	0.22μF, 50V, Film (DEW)
C443~C446	379124735	0.047μF, 50V, Film (DEW)
C455~C462	3504226	6800μF, 80V, Elect.
C465, C466	354782299	0.22μF, 50V, Elect.
	Resistors	
R401~R404	442525614	560Ω, 1/2W, Metal oxide film
R405, R406	442523314	330Ω, 1/2W, Metal oxide film
R411, R412	442521614	160Ω, 1/2W, Metal oxide film
R413, R414	441624734	47KΩ, 1W, Metal oxide film
R415, R416	442521234	12KΩ, 1/2W, Metal oxide film
R423, R424	5225076	N10HR22KBDM, Semi-fixed
R429~R432	441723324	3.3KΩ, 2W, Metal oxide film
R433~R436	442521214	120Ω, 1/2W, Metal oxide film
R441~R444	442521024	1KΩ, 1/2W, Metal oxide film
R445~R448	442523914	390Ω, 1/2W, Metal oxide film
R457~R460	442525104	51Ω, 1/2W, Metal oxide film
R463, R464	442520514	5.1Ω, 1/2W, Metal oxide film
R465, R466	441720754	7.5Ω, 2W, Metal oxide film
R467~R470	442520224	2.2Ω, 1/2W, Metal oxide film
R475~R478		
R479~R482	442521014	100Ω, 1/2W, Metal oxide film
R487~R490		
R491~R494	4000080	0.47Ω, 5W, Metal plate
R501~R504		
R505~R508	4000063	0.47Ω, 2W, Metal plate
R513~R516		
R541, R542	442520474	4.7Ω, 1/2W, Metal oxide film
	Jumper sockets	
JL403,JL404	25050267	NSCT-3P95
JL405,JL406	25050270	NSCT-6P98
	Bracket	
	27130430	(KE)
	27300826	Bus (S)
	27300827	Bus (C)

TRANSISTOR PC BOARD (NAETC-3321-1) – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q443,Q444	2212864 or 2212863	2SC3419-Y or 2SC3419-O
	Capacitors	
C463, C464	379122235	0.022μF, 50V, Film (DEW)

TRANSISTOR PC BOARD (NAETC-3322-1) – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q445,Q446	2201644 or 2201643	2SC3298-Y or 2SC3298-O

TRANSISTOR PC BOARD (NAETC-3323-1) – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q447,Q448	2201634 or 2201633	2SA1306-Y or 2SA1306-O

POWER SUPPLY CIRCUIT PC BOARD (NAPS-3324-1) – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diodes	
D801,D802	22380014AF	PB102F
	Capacitors	
C801~C804	375103345	0.33μF, 125V, Film (ME)
C805, C806	375104745	0.47μF, 125V, Film (ME)
	Resistors	
R801~R804	442522294	0.22Ω, 1/2W, Metal oxide film
R805, R806	442527504	75Ω, 1/2W, Metal oxide film

FUSE PC BOARD (NAETC-3325-1A) – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Fuse holders	
F803a,F804a	25050065	YSH403T
	Terminal	
	25060092	NTM-1S33

SPEAKER SWITCH PC BOARD (NASW-3329-1) – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Switch	
S701,S702	25035591	NPS-222-L553

SERVO OPERATION PC BOARD (NADIS-3330-1) – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Lamps	
PL701, PL702	210160	PL14V150mA
	Holder	
	27190640A	Lamp holder

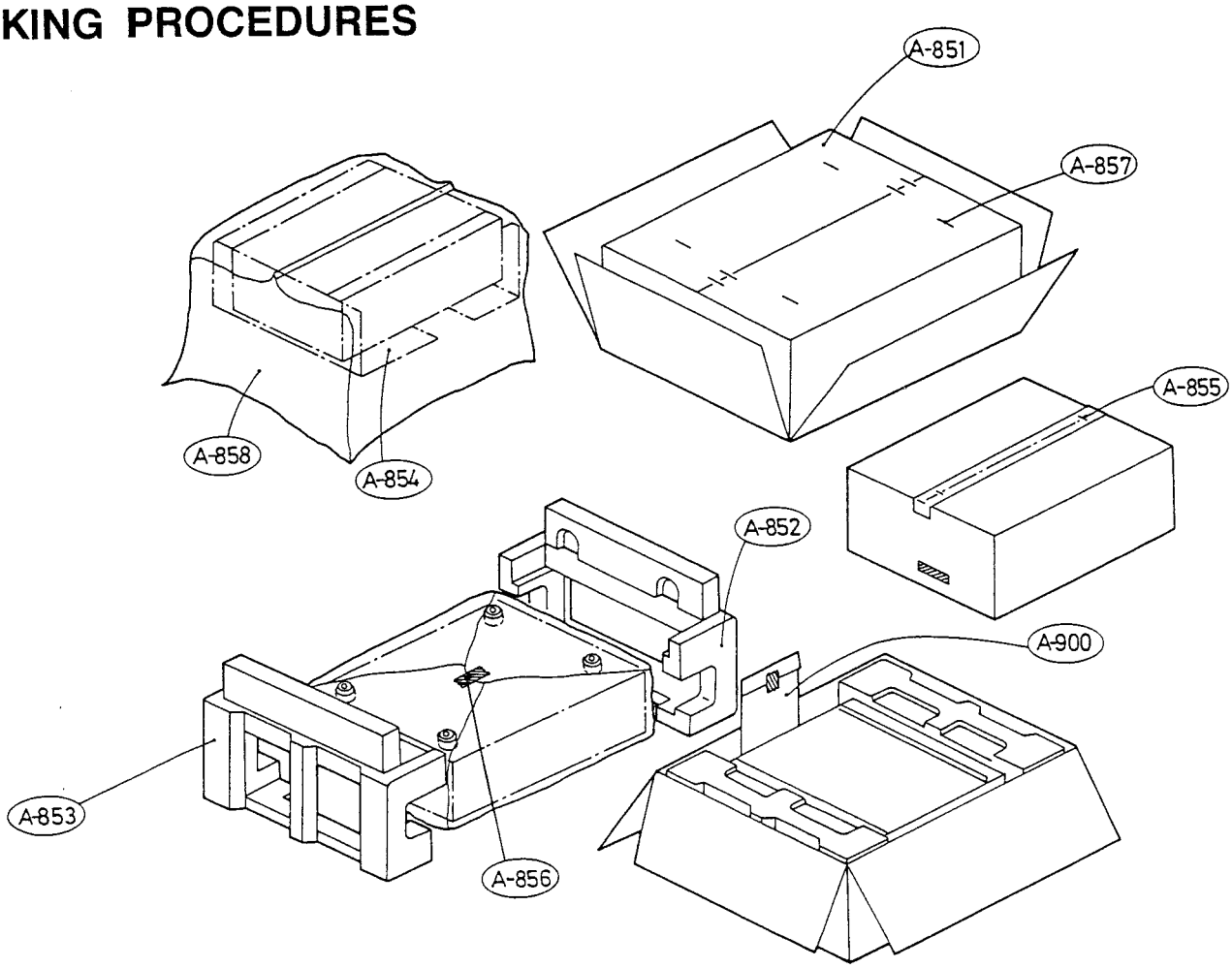
SPEAKER DISPLAY PC BOARD (NADIS-3331-1) – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diodes	
D911~D914	225137CG or	SEL-2413E-CG or
	225137CY or	SEL-2413E-CY or
	225137DG or	SEL-2413E-DG or
	225137DY	SEL-2413E-DY, LED
	Holder	
	27190639	LED Holder (SP)

POWER DISPLAY PC BOARD (NADIS-3332-1) – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diodes	
D915, D916	225142DX2	SEL2913KDX2, LED
	Jumper socket	
JL601	25050280	NSCT-3P108
	Holder	
	27190638	LED Holder (POW)

PACKING PROCEDURES



REF. NO.	PART NO.	DESCRIPTION
A851	29051697	Master carton box
A852	29091081C	Pad ass'y, L
A853	29091084B	Pad ass'y, R
A854	290093-1	Sheet
A855	260012	Damplon tape
A856	261504	Paper tape
A857	282301	Sealing hook
A858	29100038A	720×950mm, Poly-vinyl bag

A900

Accessary bag ass'y

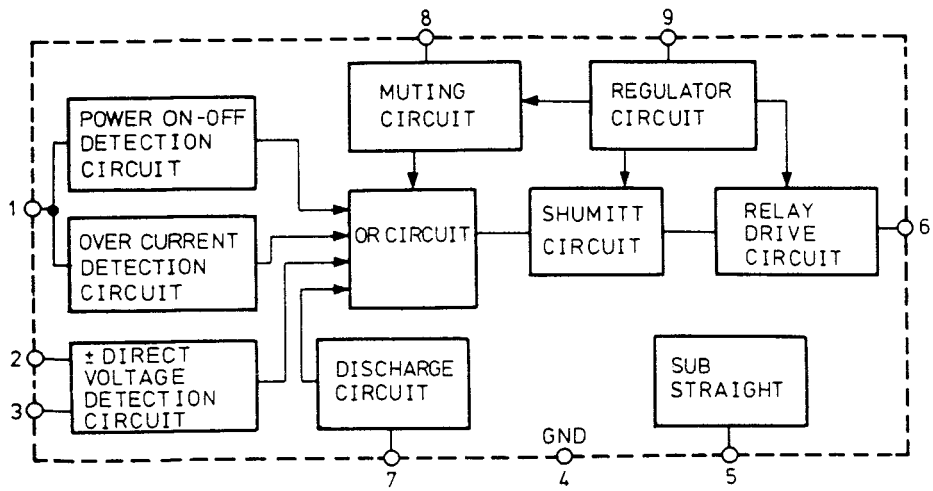
29341260	Instruction manual
29365020	Warranty card
29100094A	Poly-vinyl bag (Warranty card)
2010097	Connection cable
29100006A	350×250mm, Poly-vinyl bag for accessary

SERVICE NOTES

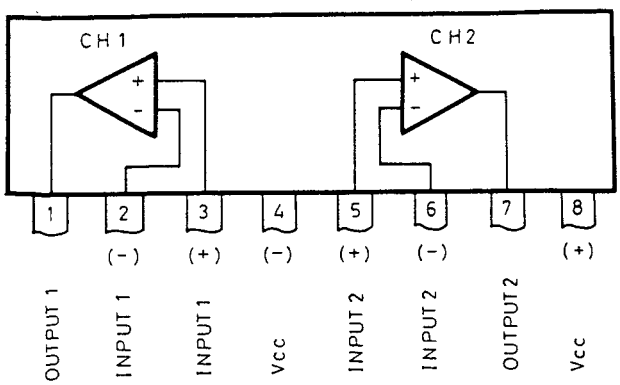
1. When the push switch knob is removed, the switch lock must be in the OFF condition. In particular, because it is desirable for the vertical push switch to be pulled out, care should be taken. (This is to prevent damage to the lock section.)
2. Care should be taken to avoid using excessive force when handling the speaker terminal board NAETC-3315 and the speaker relay board NAETC-3314. (This is to prevent damage to the boards.)
3. When a meter is connected to the NF loop internal circuit, the relationship of the measuring lead wire capacity and the input impedance of the meter can cause oscillation in the amplifier. When such occurs, if a 100Ω resistor is connected to the end of the meter cable, this condition can be alleviated.
4. When making amplifier measurements, if a signal is taken from the load resistor side (dummy load), because of the possibility of an output error with a large distortion measurement, the signal taken should be directly from the amplifier terminal side.

IC BLOCK DIAGRAM

TA7317P (Protective Driver)

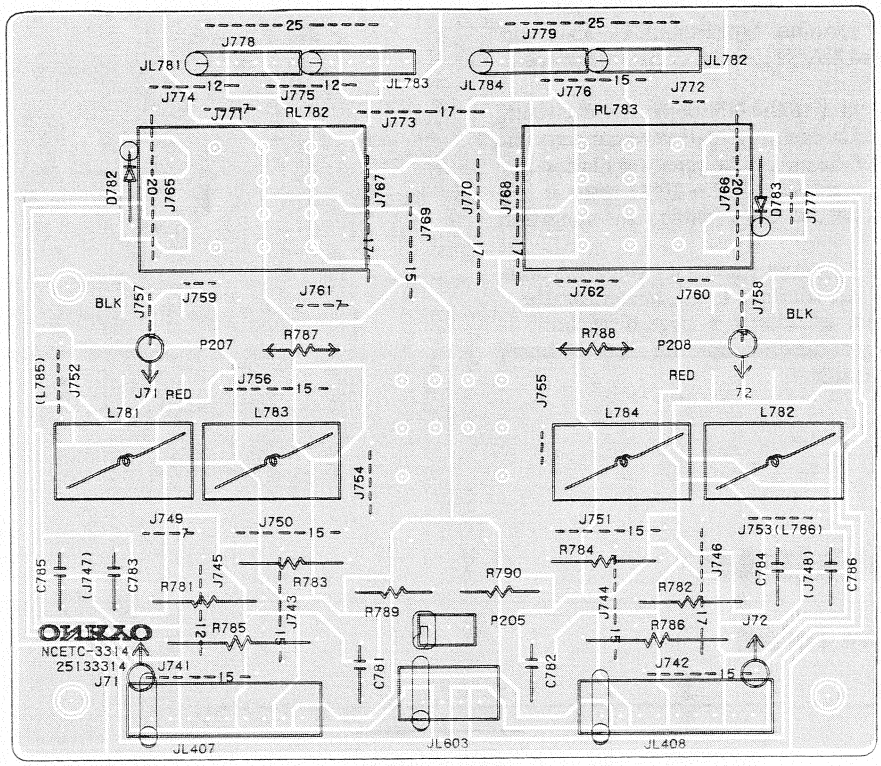


M5218L (OP Amp)

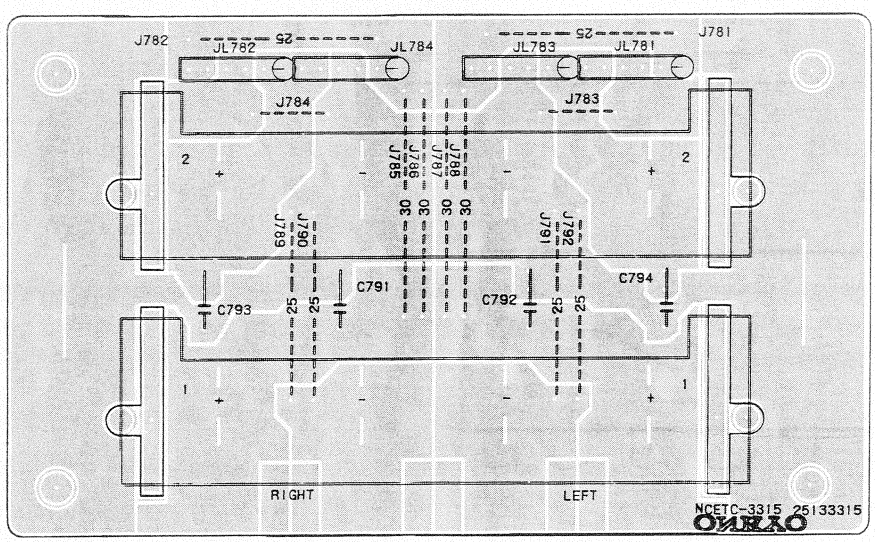


PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE

NAETC-3314-1A



NAETC-3315-1A



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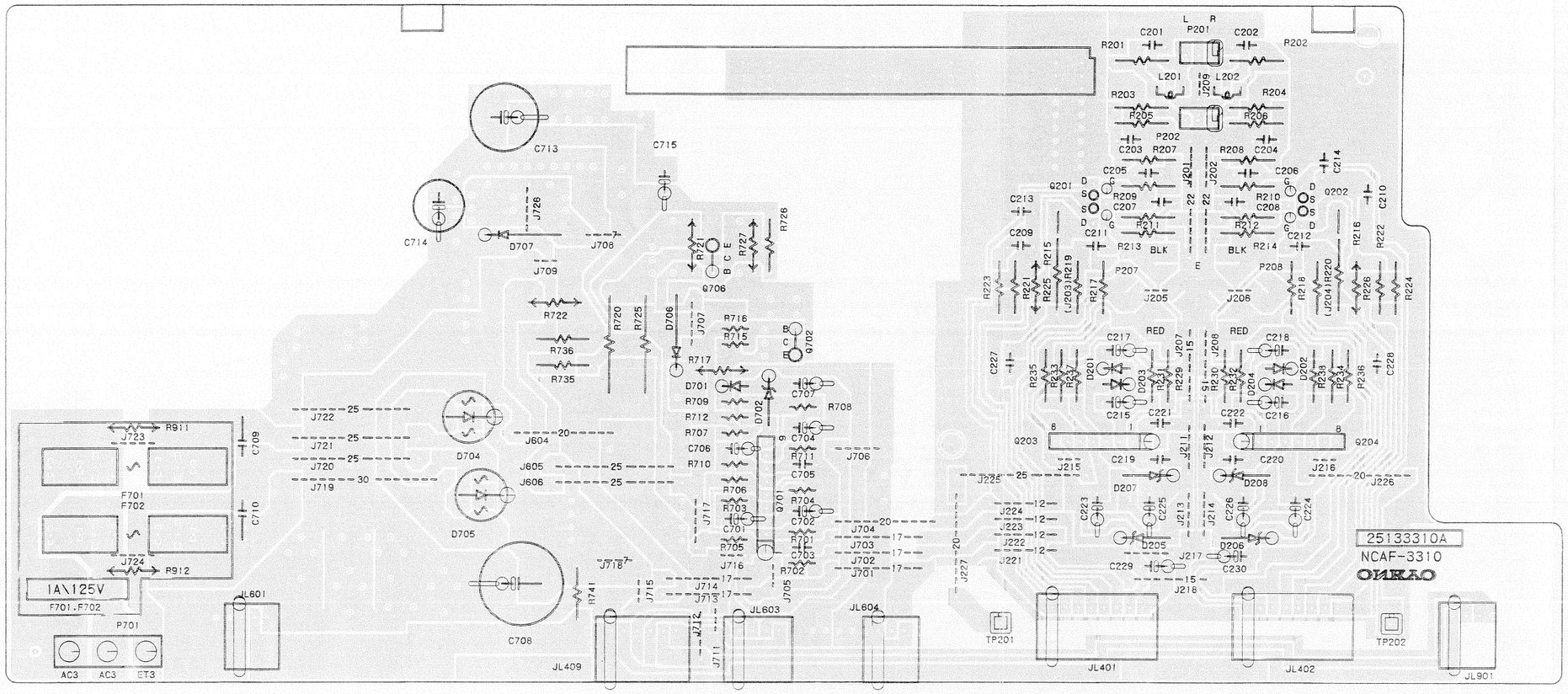

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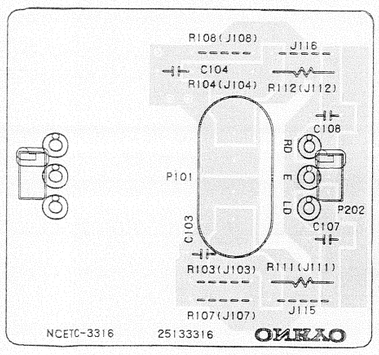

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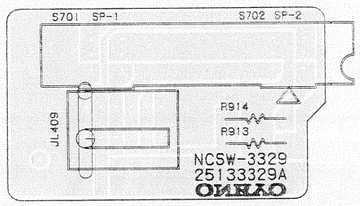
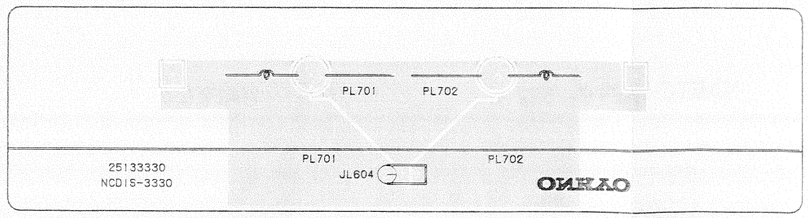


NADIS-3330-1



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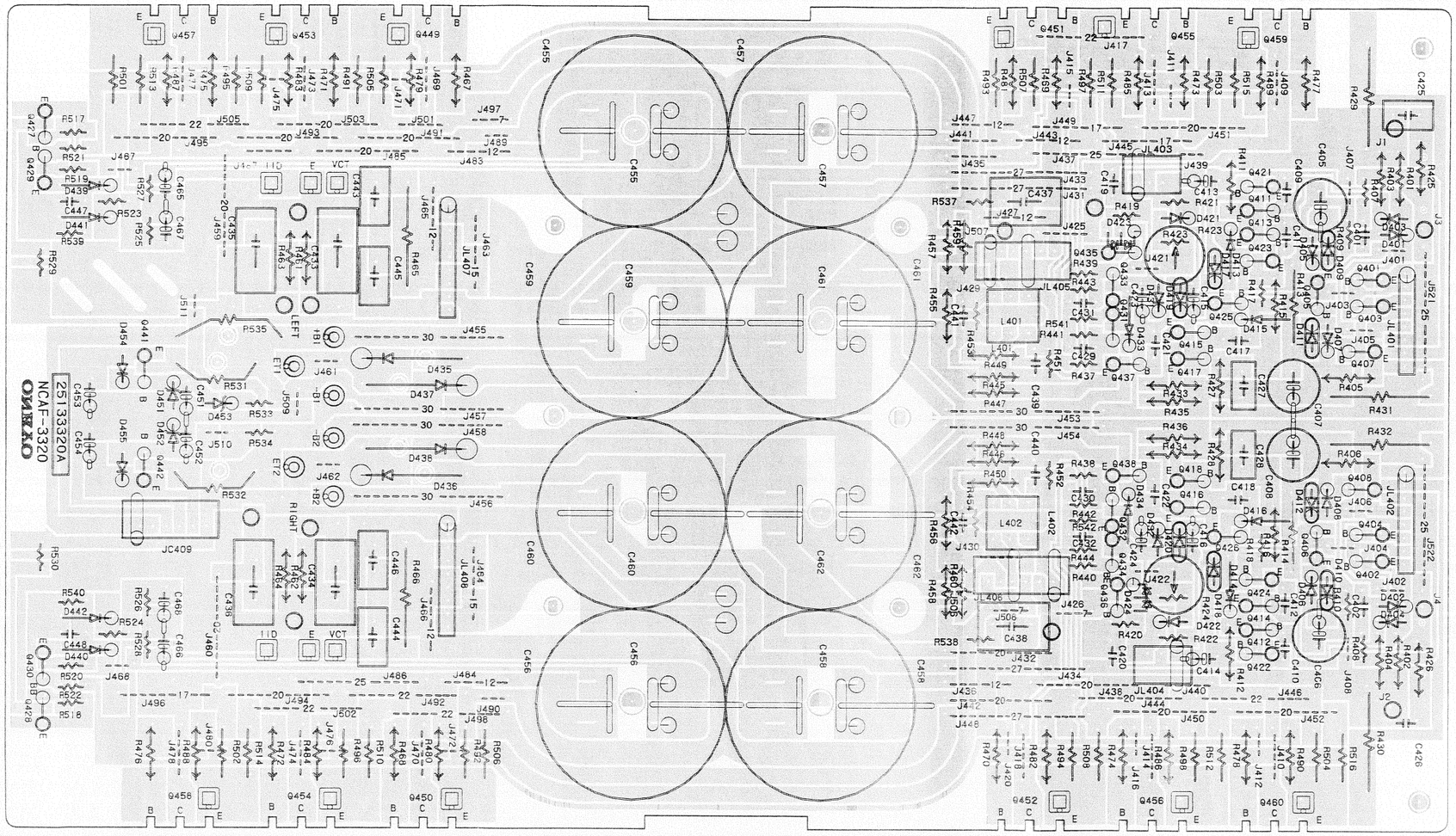

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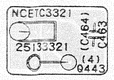

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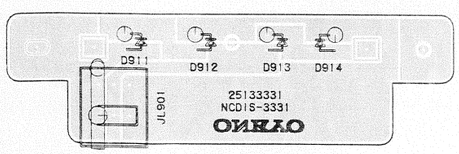

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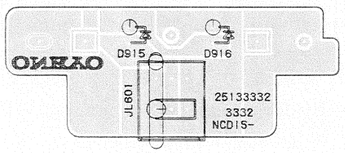
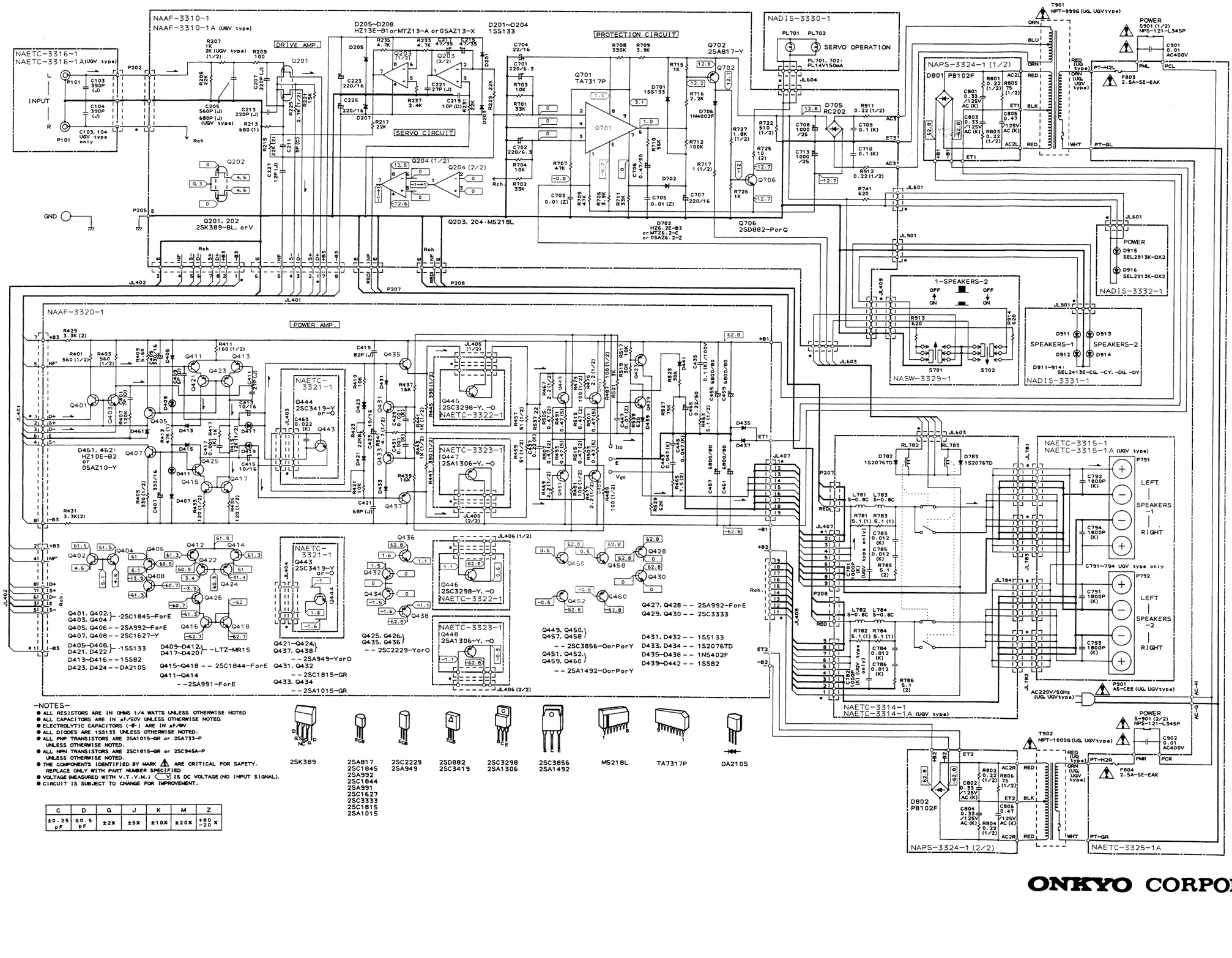


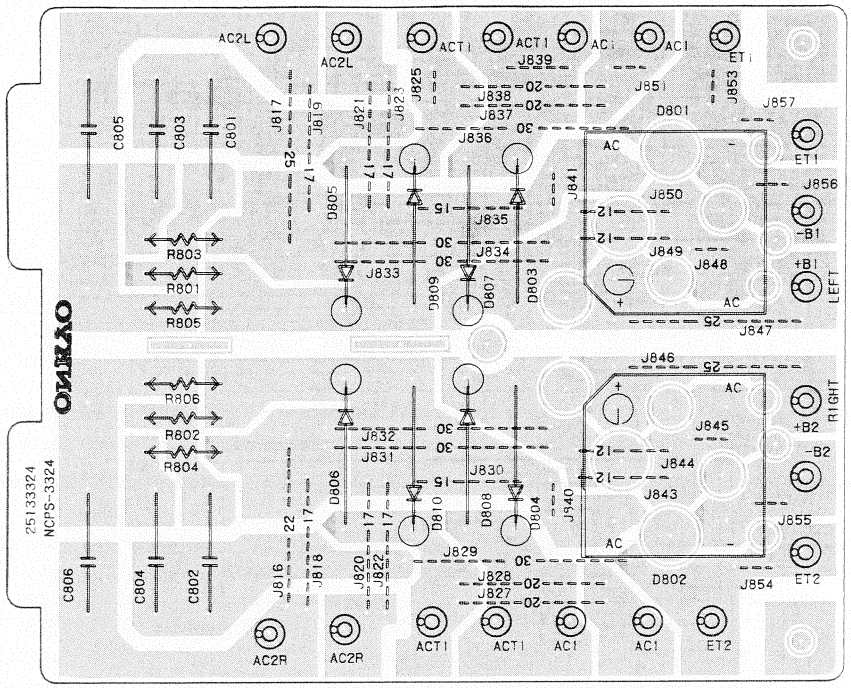
SCHEMATIC DIAGRAM



C	D	G	J	K	M	Z
±0.25 pF	±0.5 pF	±2%	±5%	±10%	±20%	+80 -20 %

ONKYO CORPORATION

NAPS-3324-1



NAETC-3325-1